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The CHAIRMAN: We are very much obliged to Mr. Jennings for showing us a little further light. Is there anyone else in the room who wishes to speak on this subject? If not, the time has arrived when we ought to adjourn and I now declare this session closed.

Adjourned.

FOURTH GENERAL SESSION

(Shakespeare Club, Tuesday, May 23,
9:30 a. m.)

(Mr. A. E. Bostwick, presiding.)

The CHAIRMAN: When a serious problem comes up for consideration, it can be treated in different ways. Some people avoid it, others deny that there is any problem and others admit that there is a problem, but say that it is insoluble, and still others investigate it seriously and bring out at least something worth while. Those of you who listened to Mr. Chivers' paper at Bretton Woods know he has seriously investigated the question of book-binding. I now have the pleasure of introducing Mr. CEDRIC CHIVERS of Brooklyn.

MATERIALS AND METHODS IN BOOK-BINDING

(Supplementary to Bretton Woods
Exhibit.)

Speaking of the behavior of books in public libraries, as issued by the publishers, the report of the Binding Committee of the American library association says:

"Cloth-bound books must be withdrawn from circulation and sent to the bindery when they have been in the hands of less than twenty readers. Larger books of travel, history, etc., can seldom be used more than ten times before being rebound, and it is not uncommon to have them torn from their covers before being in the hands of five readers."

It is a matter of concern that we should recognize the seriousness of such a statement as this, and it is our business to remedy such a condition of things if we can.

We recently learned in investigating the qualities of paper of which modern books are composed, that they differ very greatly in so many ways and in such degree as is set forth in Fig. 1. These variations occur in ordinary books, having deleted all the books of extraordinary sizes and qualities, either of the poor or excellent varieties:

6½"x 4¾" will not be recognized as too small a book, and 10¼"x 8" will be recognized as not too large a book.

Books of less weight than ¾ lbs. and greater weight than 5¼ lbs. may be discovered in a library.

Thinner paper than 2.5M. and thicker than 13.25M. may be found.

Tensile strength so slight that the ordinary machines would not record it, and again paper so stout as greatly to exceed 20 lbs. to the inch, occur in every library of any considerable size.

There are also sections thinner and thicker than those recorded on the accompanying diagram.

It may, therefore, be taken that the variations of quality and condition here shown are such as have to be dealt with in the everyday handling of books in a lending library.

It has been shown that previous to 1890 papers in vital respects were more nearly alike and were stronger by more than 50 per cent than those used to-day. Indeed, the comparison is as 8 to 3. There has been little effort made, except in one or two directions, to deal with these alterations in the qualities of books as far as their binding is concerned. Librarians and bookbinders are fully aware of the far greater use to which books are subject in the public library over the use they would get in the case of the private purchaser. We see clearly that the binding which would hold in the one case is totally inadequate for the other.

The cord holding the smaller weight in Fig. II is seen to be too slight to hold the larger weight. Yet this illustrates the state of the case as between the private use of a book and the public use of a book, with the additional disadvantage that owing to the deterioration of paper the bind-

ing represented by the cord has been weakened.

The improved methods which we recommended for dealing with the different classes of paper of which we had become cognizant, implied the use of the most appropriate materials for binding and covering books. An examination of the more important of these is the matter in hand.

Testing the various materials used for covering the books, we find, as we would expect, considerable difference between the breaking strain in the direction of the warp and the strain suffered by the woof, and on Fig. III is given the results of a number of such tests. It will be seen that the ordinary edition cloth, chiefly used in publishers' bindings, suffers a strain in the warp of 25 and in the woof of only 10 lbs. to the half-inch. With stouter library cloth the difference is even larger, being 30 for the warp and 10 for the woof.

A practical suggestion is here made—that if the cloth were used so that the warp should run across the book rather than up and down the cover, a certain amount of strength would be added to the binding. It would not be as much as the difference between the two strains, because attrition and friction would be the same, but considerable additional strength would be obtained. An objection to using the cloth in this way would be urged, that the pattern or design, when it is not an all-over and even one will be found in the direction of the warp, and it is supposed aesthetically to be of more importance that such a pattern should be up and down the book and not across it. This may even on aesthetic grounds be an arguable point, but as a constructive advantage it would seem wise to adopt the suggestion to use the cloth in the strongest way of the threads.

Fig. IV gives the result of testing a number of materials one inch wide, used in bookbinding for end paper lining, plate lining, jointing, etc. These again show the variation of strength value in the warp and woof. It would be evident that in the use of these materials, advantage should be taken of the stronger way of the warp, and use it in the line of strain.

Figs. V, VI, VII show the warp and woof of several kinds of cloth photomicrographed to 56 diameters. They have been prepared in order to visualize the difference between the warp and the woof, which they there clearly do, but are of little importance or advantage to our inquiry, other than as illustrating this one point. It may be of a little interest to observe the penetration of the coloring matter in the case of the thinner face cloth, and the partial permeation with the thicker qualities.

We now come to the consideration of the mechanical values of leather, the subject being of much more importance than that of dealing with cotton or linen materials. Leather has qualities which no other materials possess in adaptability to the binding and covering of books, because if wisely chosen, it is of far greater variety in thickness, softness, pliability, tenacity of adhesion and strength, being capable of adaptation to the exceedingly varied conditions which our diagrams illustrate modern books to exhibit.

The Royal Society of Arts of England appointed a committee in 1901 to discover the reasons for the decay observed with modern leathers, and their very valuable report dealt exhaustively with the phase of the subject they undertook to consider. Some amplification of their inquiry appears to be necessary along the lines we are now pursuing, for supposing leather to be properly tanned and dyed in the manner the report specifies, it is still desirable to know which leathers supply the best mechanical qualities, as above indicated.

Apart from the actual wearing of the leather in use, which it is impossible to follow for the purpose of testing, we may subject leather to tearing and breaking strains, and obtain some useful data of value. The tearing strain is ascertained in the fashion depicted by Fig. VIII.

Fig. IX represents a skin of leather. A, B and C represent pieces of leather cut for the purposes of testing in different directions of the skin, A diagonally across the shoulder, B horizontally across the back, C vertically to the back. There is a grain with skins, but not so distinct as

with artificial materials, and a further test of breaking strain along the lines of A and B will demonstrate this. We have then a test with a piece cut as with C, with another as with B, and a third as A diagonally across the skin.

In Fig. X we have set out the result of testing a number of different kinds of skins. First the thickness in thousandths of an inch is given, then the tearing strain in pounds. The strength ratio is shown and the order of value of the skins compared with each other.

The first leather given, Niger leather unpared, with the total thickness of 190, suffers a tearing strain of 189 lbs., with a strength ratio of .99. If this be taken as a standard one may readily appreciate the values of leathers in respect to their tearing strains. It is a valuable coincidence that the best leather gives a tearing strain of one pound for a thousandth of an inch in thickness, as it facilitates comparisons. An examination of these figures will be instructive.

Our experiences are ratified with the skins of poor quality. Their lives being short, we had become cognizant of their failure, but our interest is aroused by the results given of the more costly and the leathers of greater repute. We were prepared from our practical experience to see that the calf leather should be demonstrated to be very weak, the strength ratio being .21, and the order of value to be 18 in the list given, but it must be viewed with some alarm to discover that French levant morocco should show a strength ratio of .40, and to offer for a thickness of 242 thousandths a tearing strain of only 97 lbs. This is against Niger morocco 190 thousandths to 189 lbs. It arouses the reflection that in the effort to obtain the colors and brightness required with modern book-binding, much of the strength and nature of the morocco has been destroyed.

The leathers in the upper part of the table have been chosen with care, and the moroccos 7 and 5 and pigskins 6 and 12 have been prepared under the specification of the Society of Arts.

The leathers under the title of odd

pieces, were collected from a small book-binder's shop where library books had not been bound. In other words, no effort had been made to obtain the best leather of the different sorts. The results are seen to be bad.

The deterioration of levant morocco is a matter to be viewed with alarm. The order of value of one piece is 7, with a strength ratio of .63, while for another, the order of value is 16, and the strength ratio is only .29. These pieces of leather are similar in color, and were purchased from the same firm, but the poorer quality had been in house some fifteen years, showing a very serious deterioration.

The high value which is shown by the Niger leathers is not a little surprising when it is remembered that these leathers have been tanned by uncivilized natives. The figures have been submitted to Mr. Seymour Jones, who was a member of the committee appointed by the Society of Arts above mentioned, and the following valuable letter has been received, dealing with the subject from the point of view of an expert:

"The breaking strains, as given in yours of the 5th, go to confirm my work in the same direction, and all I have written or spoken on the subject. Two anomalies would appear to require explanation. Levant 87 M. thick breaks at 36 lbs. Again, a piece 55 M. breaks at 35 lbs. Both, I assume, are unpared. You will find that substance, as it increases, does not carry with it a corresponding increase in strength, that is, strength in proportion to substance increases at a decreasing ratio. This is due to the fact that as age creeps on the number of fibres do not increase, but do increase in thickness and some muscular strength, but later not proportionately. Examples: a rope made of 6 strands of $\frac{1}{4}$ " thick is not as strong as a rope made of 12 strands and $\frac{1}{4}$ " thick in diameter. The more fibres to a given area, so is the increase in strength proportionately. Hence if you have a piece of leather 2" square and 87 M. thick, and assume you have 1,000,000 fibres, it will not have a breaking strain equal to a 2" say 45 M.

thick and containing 1,500,000 fibres. The second anomaly, namely, why does levant pared to 47 M. break at 22, and Niger pared to 32 M. break at 33? The explanation rests entirely upon two factors:

1. Levant contains from 40 to 50 per cent of tan, which implies over-tanning, whereas Niger contains about 27 per cent of tan.

2. The levant has been robbed of its natural nourishing fat prior to tan. The small amount of fat in Niger has been left in. If the levant contains grease, and still has a lower tearing factor, it follows that the displaced natural fats have not been properly replaced to insure absorption by the fibres as in life. The Nigerian tanner in his so-called ignorance, has been working along the lines of least resistance, allowing atmospheric conditions, temperature and time to operate, with results which give a higher satisfactory result than can be obtained under civilized conditions. In fact, we have much to relearn, but unfortunately the civilized tanner thinks he knows better. I do not know of any skin on the market at the present time which possesses the qualities appertaining to longevity, withstanding attrition, etc., as is possessed by those tanned in Nigeria, and now known as Niger skins. I am of the opinion that of the bookbinding skins on sale, the Niger skins are the most suitable and meet all the demands made by the Society of Arts report. Upon that point I have no hesitation in expressing that opinion."

It must be borne in mind that the figures here given deal with only one quality of the leathers under consideration, that is, their strength in resisting the tearing strain. Other important qualities are necessary. This may be illustrated by referring to the hand-grained Persian goat, whose order of value is 10, and whose strength ratio is .52 in tearing strain. This leather has been subjected to the following criticism by the Society of Arts Committee, and we may therefore expect to discover very different results after two or three years' use in the library. The report says: "The Persian tanned goat skins are extremely bad. Books bound in this material are shown to have become unfit for

use in less than twelve months after binding." This doubtless because of bad tanning, the results of which are not immediately apparent.

The breaking strain of various leathers is arrived at by taking strips in the way depicted in Fig. IX, A and B. These will be found set out on Fig. XI, first the thickness, then the breaking strain, the strength ratio follows and its order of value.

In a general manner the tests for breaking coincide with the "tearing" tests, and become together valuable as giving data of the comparative mechanical strength of leathers. It is necessary always that this strength should be allied with good tanning and dyeing, in order to obtain the full advantages required.

This short inquiry has already shown the necessity for constant watchfulness in the selection of leathers for books requiring to be protected either for extra hard usage or for a very long life.

Until these tests were undertaken we have always assumed that the higher priced French levant moroccos were above any reproach, except that of their cost, but it is here demonstrated that they are not reliable, and that the native tanned skins of Africa are greatly their superior in both respects of strength and probable longevity.

Are we therefore to select from the open market Niger leather when it is required for either of these two purposes—of strength and longevity—for the binding of books?

The following experiment will show the danger of trusting with any confidence to the commercial use of the word "Niger." Leathers purporting to be Niger leather and to have the wearing qualities which have already become known in the trade, were recently offered for sale and were subjected to chemical and mechanical tests. The results showed that in one case the leather was decidedly not Nigerian, and in the other that if it were Nigerian it had been so abused in its tanning and dyeing treatment as to destroy its distinguishing merits.

The mechanical tests show the results

depicted upon Fig. XII. While real Nigerian leather shows a tearing strain of 189 to a thickness of 190, the leather offered as Nigerian leather and now under question showed for a thickness of 88 a tearing strain of only 27. In other words, real Nigerian leather showed three times the strength of the imitation.

This demonstrates either one of two cases: the leather, which we will call "Imitation," could not have been Nigerian leather at all, or it had become partially destroyed in fitting it for the market. The grain was evidently plated, the color far too even and the skin too perfect in appearance to be real Nigerian leather. A breakdown in use would occur indubitably where strength would be required, and should the leather be used for books requiring to give long service, its treachery would become presently more apparent and disastrous. If the leather were real Nigerian and had been dealt with so that two-thirds of its original strength would be lost, other results of premature decay would most certainly follow. It is, therefore, apparent that care and inquiry must be made by librarians who intend to have their books properly bound and covered.

The importance of using the best of leathers for the binding of books cannot be overestimated. These are not necessarily high in price if fine finish is dispensed with.

There is no material existing which can be compared with leather for lining or binding the backs of books.

It is the only thing we know of which, with its many qualities of thickness, pliability, strength and tenacious adhesiveness, is at all adapted to the varying qualities of modern books.

Fig. I shows how many varieties there are, and a calculation from these data or the experience of any librarian or book-binder will tell of many hundreds of kinds of books.

The range of appropriate materials when leather is not used is woefully short, and in no case can any of them be used for the linings of the backs of books; their effectiveness is limited to their service as covering materials only. Leather answers

both purposes of covering and lining or binding the back.

The statement in Fig. XIII will illustrate this point. While the books themselves have a very wide range of inconstancy, the materials at the disposal of the machine binder, as distinguished from the leather binder are, as seen, very limited.

In cloth, endpapers, linings, etc., as here set out, the qualities are very few. The case is totally different with leather. A careful and informed binder is able to obtain such a range of qualities in leather as enable him appropriately and effectively to deal with the hundreds and more variations of modern books.

Much has recently been written of machine sewing and its value for library books, but machine sewing can be used only by sewing through the fold, and it has been demonstrated that with 7,000 different books published during the last three years, only 400 of them were of good enough quality to allow of being sewed through.

All the other 6,600 books were of paper so bad that the act of folding deprived the paper of 50 per cent of its strength, while its original strength showed a deterioration of more than 50 per cent over that in common use twenty years ago.

Nearly all modern books must be hand-sewed in order to give reasonable service, and they must be bound and covered with pliable, tough and chemically pure leather to insure long life.

The librarian who is interested enough to give the subject a little time and attention, may obtain both these qualities for the books under his charge, and this at no greater cost than is often incurred for unreliable work and materials.

Mr. HILL: Mr. Chivers showed us a piece of levant morocco, a piece which had been in use fifteen years, and I wonder if he has a piece of pig skin for comparison in the same way.

Mr. CHIVERS: No, I have not, but I can tell you about the pig skin. I was chiefly instrumental, twenty-five years ago, in bringing pig skin on the market. Pig skin is only the grandson of hog skin. I never

DIFFERENCES IN
THE PHYSICAL QUALITIES
OF
ORDINARY LIBRARY BOOKS











<u>SIZES</u> $6\frac{1}{2} \times 4\frac{3}{4}$ to $10\frac{1}{4} \times 8$		
<u>WEIGHT</u> $\frac{3}{4}$ lb to $5\frac{1}{4}$ lbs		
<u>VARYING THICKNESS OF PAPER</u> 2.5 ^M to 13.25 ^M		
<u>TENSILE STRENGTH</u> OF PAPER, FOLDED READY FOR BINDING 1.3 to 20		
<u>THICKNESS OF SECTIONS</u> 13 to 73		

Fig. I

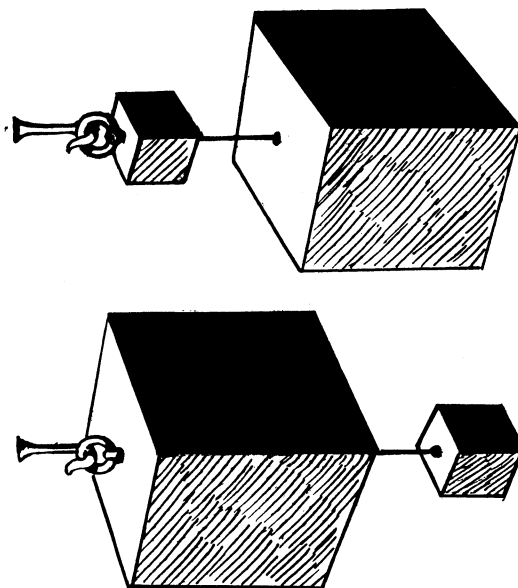


Fig. II

CLOTHS TESTED FOR BREAKING STRAIN

SIZE OF PIECE TESTED $7\frac{7}{8}$ inch x $\frac{1}{2}$ inch

MATERIAL	BREAKING STRAIN			PRICE PER YARD
	WARP	WOOF	MEAN	
Vellum Buckram	70	43	56·5	41c
Ditto	66	42	54	34c
Ditto	63	30	46·5	41c
Ditto	55	38	46·5	41c
Art Buckram (all linen)	83	44	63·5	41c
Canvas Buckram	42	15	28·5	28c
Ditto	39	26	32·5	28c
H. Cloth	65	29	47	25c
Unglazed Buckram	68	40	54	41c
Library Cloth	55	39	47	34c
Ditto	30	10	20	21c
All Linen	48	35	41·5	34c
Durabline (thick)	68	30	49	1·07c (Extra Wide)
Ditto (thin)	45	18	31·5	44c
Editions Cloth	25	10	17·5	20c

FIG. III

LININGS TESTED FOR BREAKING CHAINS

SIZE OF PIECE TESTED $7\frac{7}{8}$ inch x 1 inch

MATERIAL	BREAKING STRAIN			PRICE PER YARD
	WARP	WOOF	MEAN	
Silkette (Sleeve Lining)	41	22	31·5	27c
Ditto	31	15	23	26c
Taffetine	25	14	19·5	31c
Jaconet	31	12	21·5	15c
Ditto	25	17	21	15c
Ditto	18	15	16·5	14c
Ditto	10	8	9	14c
Linen	35	25	30	73c
Ditto	55	28	41·5	52c
Ditto	40	21	30·5	38c
Linenette	32	22	27	16c
Ditto	29	18	23·5	16c
Cambric	31	10	20·5	12c
Ditto	24	13	18·5	10c
Holland	33	27	30	24c
Glove Lining	32	18	25	16c

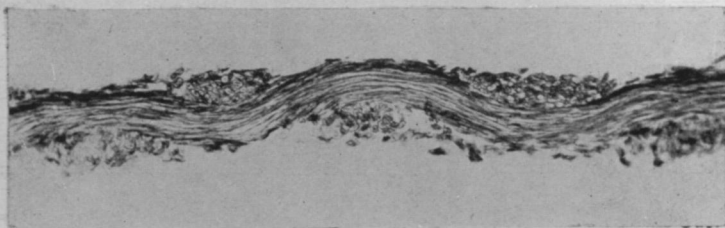
FIG. IV

PHOTOMICROGRAPHS OF TRANSVERSE SECTIONS OF "EDITIONS" CLOTH

WARP
(x 56)

*BREAKING
STRAIN*

21lbs



WOOF
(x 56)

*BREAKING
STRAIN*

11lbs

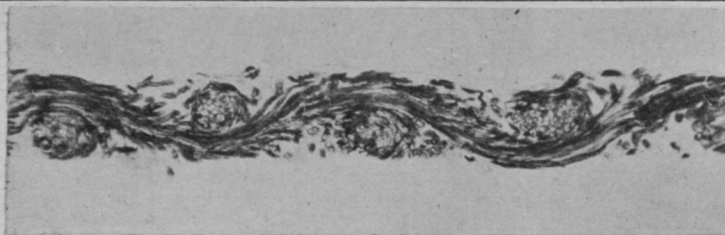


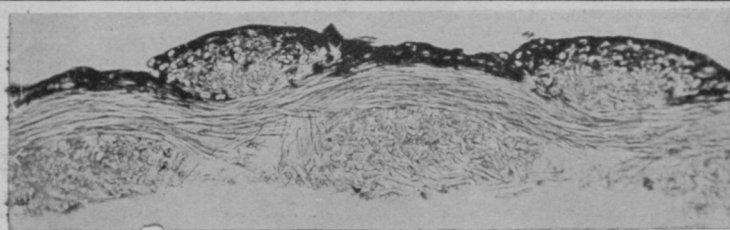
FIG. V

PHOTOMICROGRAPHS OF TRANSVERSE SECTIONS OF LIBRARY CLOTH (GRAINED SURFACE)

WARP
(x 56)

*BREAKING
STRAIN*

55lbs



WOOF
(x 56)

*BREAKING
STRAIN*

39lbs

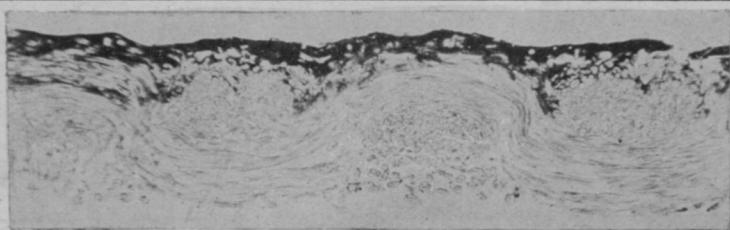
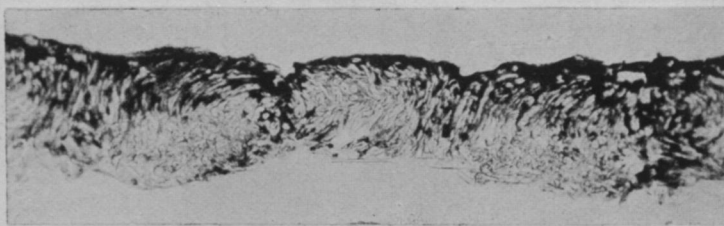


FIG. VI

PHOTOMICROGRAPHS
OF TRANSVERSE SECTIONS OF
LIBRARY CLOTH
(SMOOTH SURFACE)

WARP
(x 56)

BREAKING
STRAIN
60 lbs



WOOF
(x 56)

BREAKING
STRAIN
40 lbs

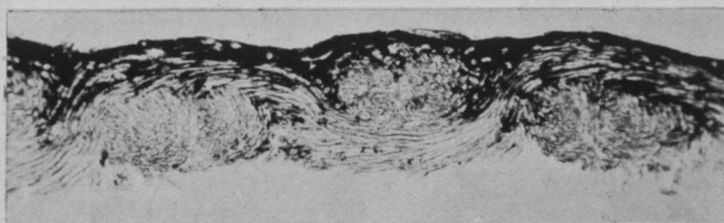


FIG. VII

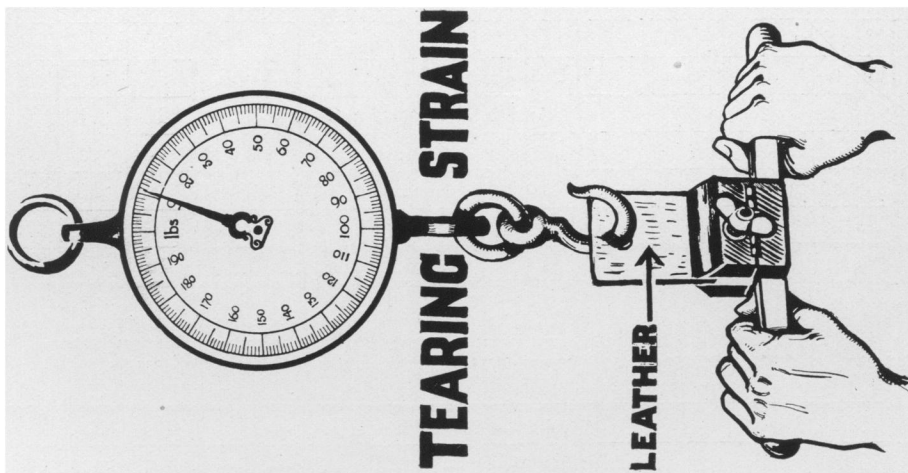


Fig. VIII

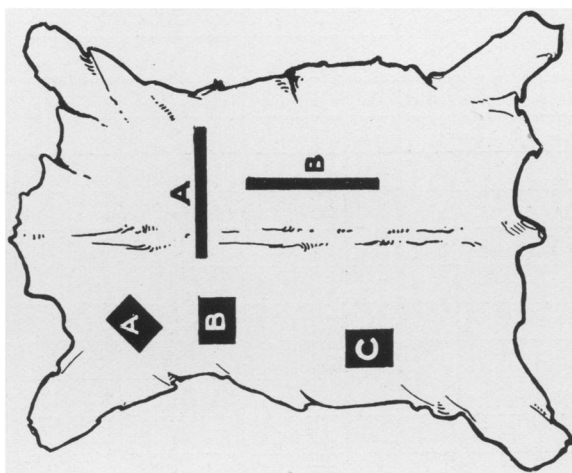


Fig. IX

TEARING STRAINS OF VARIOUS LEATHERS

SIZE OF PIECE TESTED $2\frac{1}{8}$ inch x $1\frac{3}{4}$ inch

Ref. No.	LEATHER TESTED	THICKNESS in 1000th of in.				TEARING STRAIN in lbs.				Strength Ratio	Order of Value
		A	B	C	TOTAL	A	B	C	TOTAL		
9	Niger Leather(un-pared)	70	65	55	190	63	81	45	189	·99	2
2	Niger Leather (goat)	45	40	39	124	31	40	32	103	·83	4
—	“ “ (sheep)	40	40	36	116	36	41	35	112	·96	3
—	“ “ (pared)	32	33	33	98	33	21	20	74	·75	5
1	Soft Niger Leather	21	21	20	62	16	16	12	44	·70	6
11	Imitation Niger Leather	29	29	30	88	9	7	11	27	·30	15
—	Ditto	29	29	29	87	10	11	10	31	·35	14
—	Thick Levant (un-pared)	87	80	75	242	36	24	37	97	·40	13
3	Levant Morocco	50	55	50	155	20	21	22	63	·40	13
14	Ditto	45	48	45	98	10	10	9	29	·29	16
10	Ditto	55	50	50	155	35	35	28	98	·63	7
7	Morocco (thick)	70	57	55	182	29	21	23	73	·40	13
5	Morocco (thin)	37	37	39	113	15	16	19	50	·44	11
13	Hard Grain'd Persian Goat	31	32	34	97	19	20	12	51	·52	10
6	Pigskin	36	34	32	102	14	18	11	43	·42	12
12	Pigskin	33	30	30	93	26	13	15	54	·58	8
—	Seal	40	45	36	121	23	23	20	66	·54	9
8	Roan	22	22	23	67	20	15	12	47	·70	6
—	Cowhide	23	25	18	66	5	5	$4\frac{1}{2}$	$14\frac{1}{2}$	·21	18
—	Cowhide	12	12	12	36	4	$2\frac{3}{4}$	$2\frac{1}{2}$	$9\frac{1}{4}$	·25	17
4	Calf	25	23	32	80	6	5	$6\frac{1}{2}$	$17\frac{1}{2}$	·21	18
—	Vellum	10	10	18	38	11	14	20	45	1·18	1

ODD PIECES OF BOOKBINDERS' LEATHERS TESTED

	Morocco	34	—	—	34	12	—	—	12	·35	
	Ditto	35	—	—	35	20	—	—	20	·57	
	Ditto	31	—	—	31	16	—	—	16	·51	
	Ditto	23	—	—	23	6	—	—	6	·26	
	Law Sheep	38	—	—	38	6	—	—	6	·15	
	Cowhide	28	—	—	28	5	—	—	5	·17	
	Ditto	33	—	—	33	7	—	—	7	·21	

FIG. X


BREAKING STRAINS OF VARIOUS LEATHERS


SIZE OF PIECE TESTED $7\frac{7}{8} \times \frac{1}{2}$ inch

Ref. No.	LEATHER TESTED.	THICKNESS thousandths of in.			BREAKING STRAIN in lbs.			Strength Ratio.	Order of Value.
		A	B	TOTAL	A	B	TOTAL		
9	Niger Leather	60	52	112	61	111	172	1·53	2
2	Niger Leather (Goat)	43	40	83	73	92	165	1·98	1
1	Soft Niger Leather	21	21	42	21	28	49	1·16	4
11	Imitation Niger Leather	30	30	60	31	22	53	·88	7
3	Levant Morocco	63	65	128	62	75	137	1·07	5
14	Levant Morocco	45	$48\frac{1}{2}$	$93\frac{1}{2}$	18	28	46	·49	12
10	Levant Morocco	56	52	108	32	33	65	·60	11
7	Morocco (thick)	64	50	114	34	35	69	·60	11
5	Morocco (thin)	40	$46\frac{1}{2}$	$86\frac{1}{2}$	30	32	62	·71	10
13	Hard Grained Persian Goat	$32\frac{1}{2}$	$32\frac{1}{2}$	65	25	35	60	·92	6
6	Pigskin	34	$37\frac{1}{2}$	$71\frac{1}{2}$	43	53	96	1·34	3
12	Pigskin	$32\frac{1}{2}$	30	$62\frac{1}{2}$	25	28	53	·84	8
8	Roan	27	24	51	20	18	38	·74	9
4	Calf	$24\frac{1}{2}$	25	$49\frac{1}{2}$	6	8	14	·28	13

FIG. XI

IMITATION (SOLD AS REAL) NIGERIAN LEATHER


	THICKNESS	TEARING STRAIN
A	29	9
B	29	7
C	30	11
<div>88</div> <div>  </div> <div>27</div>		

	THICKNESS	TEARING STRAIN
A	29	10
B	29	11
C	29	10
<div>87</div> <div>  </div> <div>31</div>		

NIGERIAN LEATHER

THIN

THICK

	THICKNESS	TEARING STRAIN
A	21	16
B	21	16
C	20	12
<div>62</div> <div>  </div> <div>44</div>		


	THICKNESS	TEARING STRAIN
A	70	63
B	65	81
C	55	45
<div>190</div> <div>  </div> <div>189</div>		

Fig. XII

NEARLY CONSTANTS	PRACTICAL VARIANTS	INCONSTANTS
QUALITY OF BINDING <i>Quality of cloth...</i> <i>" Machine sewing.</i> <i>" Boards</i> <i>" Thread</i> <i>" Mulls, supers and</i> <i>" Linings</i> <i>" Tapes and strings.</i> <i>" End-papers.</i> <i>Attachment of book</i> <i>to cover.</i>	<i>3 Values</i> <i>2 "</i> <i>3 "</i> <i>3 "</i> <i>4 "</i> <i>3 "</i> <i>2 "</i>	QUALITY OF BOOKS THICKNESS OF PAPERS { <i>VARIES FROM</i> <i>2.5 to 13.25</i> STRENGTH OF PAPERS { <i>VARIES FROM</i> <i>2lbs to 16lbs</i> THICKNESS OF SECTIONS { <i>VARIES FROM</i> <i>1 to 6</i> SIZE OF BOOK { <i>VARIES FROM</i> <i>6½×4½ to 10½×8</i> <i>OR 30×84 sq. ins</i> WEIGHT OF BOOK { <i>VARIES FROM</i> <i>¾lb to 5½lbs</i>

Fig. XIII

would allow it to be called hog skin. Some of the manufacturers wanted to call it that, but I would not permit it. It would be a case of living on the reputation of its ancient relatives. This pig skin was sent from Chicago, but it was never used generally. At any rate, it was used more largely for library purposes than anything else. And the leather never was allowed to be treated as sheep and these other leathers which show signs of deterioration. I don't believe pig skin is as good a leather as sheep. Pig skin has really been kept out of the competitive market and the result is very good.

The CHAIRMAN: The subject is an interesting one, but there is hardly time to pursue it further, and we will now proceed to the regular business of the day and hear the report of the Committee to confer with the publishers of newspapers on the deterioration of newspaper paper, Mr. Frank P. Hill, of the Brooklyn public library, Chairman.

Mr. HILL: Mr. President, the Committee appointed to confer with the publishers on the deterioration of newspaper paper, consists of Messrs. Wadlin, of Boston, Chivers and Hill of Brooklyn. Notice of the appointment of this Committee was received by the members so late as to make it impossible to present a satisfactory report at this meeting. Mr. Chivers has made a large number of experiments with newspaper paper and the Committee has made arrangements with a number of the publishers in New York to meet in conference some time in the fall. Therefore, all I can do now is to make a report of progress and request a continuance of the Committee.

Mr. ANDREWS: Mr. Chairman, perhaps Mr. Hill could say if they have made any further experiments in the strengthening of paper. Mr. Chivers alluded to the use of cellit. Is that the same as the German solution which we heard about at Bretton Woods?

Mr. HILL: Mr. President, it is similar, but the members of the Committee feel they would prefer not to make a partial report at this time, because it would be

more satisfactory to complete the experiments which Mr. Chivers has already begun, rather than make the report piecemeal.

The CHAIRMAN: The report will be received. I suppose that the Executive Board will continue the Committee.

I am sure that you do not wish me to introduce President Benjamin Ide Wheeler, of the University of California, in a long speech. That is not necessary. You all know him and I am sure it is your wish that he should proceed as soon as possible to the address. I therefore have pleasure in introducing President BENJAMIN IDE WHEELER, of the University of California.

(President Wheeler spoke on the attitude librarians should hold toward the work of their profession, but as his remarks were entirely extempore he has requested that they be not published.)

The CHAIRMAN: We thank President Wheeler for his charming address, which I am very certain will help many of us to realize that we are emerging. I would venture the assertion that some of us had gotten our heads above water and stretched out our arms and were preparing to strike out vigorously for the professional shore.

Some one said yesterday that California seemed to be a composite photograph of the United States. We meet people from all sections of the country and we find the conditions of many sections reproduced here. Especially is this true of the educational institutions of California, not only of the state university, of which Dr. Benjamin Ide Wheeler is president, but also of Leland Stanford University. We have here in Pasadena a most admirable institution, the Throop Polytechnic Institute, and the head and guiding soul of that institution is President J. A. B. SCHERER, whom we are to have the pleasure of hearing now.

BOOKS AND THE EFFICIENT LIFE

Efficiency is the ability to get profitable results with a minimum of friction and waste. Everybody is in favor of efficiency